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EXAMINER	
MA, CALVIN	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/800,281

Applicant(s)

NEAL ET AL.

Examiner

Calvin Ma

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 24 and 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Both claims 24 and 25 refers to method of generating signal which is non-statutory matter. The term "signal" is intangible and does not provide real world utility, since it can refer to any abstract waveforms.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 6-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu. (US Patent: 6,965,076)

As to claim 1, Wu discloses a keyboard enclosure comprising:

a region forming a cavity (i.e. cavity formed by lower enclosure) (see Fig. 2d, Col. 5, Lines 27-55);

and a node support (i.e. the electrical circuitry membrane that is located in the lower enclosure) located in the cavity (i.e. the lower enclosure) and operable to support a node of a switch membrane assembly (i.e. the top module which include rubber sheet and the switches over the sheet) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 2, Wu teaches the enclosure of claim 1 wherein the enclosure includes one cavity (i.e. there is one cavity in the lower enclosure) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 3, Wu teaches the enclosure of claim 1 wherein the cavity has a substantial U-shape (i.e. the cavity is a substantial u-shape) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 6, Wu teaches the enclosure of claim 1 wherein the enclosure includes thirteen node supports, each disposed in the cavity (i.e. there are at least thirteen node one for each key) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 7, Wu teaches the enclosure of claim 1 wherein the node support has a cylindrical shape (i.e. each of the node in the lower enclosure are off cylindrical shape) (see Fig. 3b).

As to claim 8, Wu teaches the enclosure of claim 7 wherein the node support is hollow (i.e. since the electrical contact on the membrane must have some space for connection and disconnect based on key press it must be hollow) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 9, Wu teaches the enclosure of claim 1 wherein the cavity has a substantial U-shape and a bottom wall, and the node support extends from the bottom wall (i.e. since the figure 2d indicate that the metal plate is optional, this means that the electrical circuitry membrane could be the bottom layer touching the bottom wall and the node support in such case will extend from the bottom wall) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 10, Wu teaches the enclosure of claim 1 wherein the node support includes an end located at an entrance of the cavity (i.e. since the electrical circuitry faces upward and the key bumps are clearly at an entrance of the cavity toward the top) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 11, Wu teaches the enclosure of claim 1 wherein the enclosure includes a floor (i.e. the bottom of the lower enclosure) and a rib (i.e. the separating pieces on the upper enclosure that create the different compartment key cluster) to maintain the position of the node support relative to the floor (i.e. the compartment arrangement of the rib contain the electrical circuitry thereby maintain the positions) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 12, Wu teaches the enclosure of claim 11 wherein the enclosure includes at least two ribs each operable to maintain the position of the node support relative to the floor (i.e. in fig. 3b it is clear that two ribs are used for the middle key clusters separation) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 13, Wu teaches the enclosure of claim 12 wherein the enclosure includes at least two node supports, and one of the ribs extends between two node supports (i.e. one of the rib separate the two node support lines of the function keys and the letter keys which naturally is extended between the two groups of nodes) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 14, Wu teaches the enclosure of claim 11 wherein: the cavity has a substantial U-shape, a bottom wall, and a sidewall, the node support extends from the bottom wall, and the enclosure includes at least two ribs that extend between the node support and at least one side wall (see Fig. 2d, 3b, Col. 5, Lines 27-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolan in view Sheehan (http://reviews.cnet.com/keyboards/apple-wireless-keyboard/4505-3134_7-30568482.html?tag=prod.img.1).

As to claim 4, Wu teaches the enclosure of claim 1 wherein the cavity has a substantial U-shape but does not explicitly teaches extends substantially 15.5 inches. Sheehan teaches wherein the keyboard is substantially 15.5 inches (i.e. Sheehan report the keyboard design which is 17.5 inches wide and 1.3 inch deep) (see Sheehan, Line 19).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have utilized the form factor of the Apple keyboard reported by Sheehan to the modular keyboard design in order to clarify the actual dimension of the keyboard which also outlines the side of the cavity which contains the membrane circuitry.

As to claim 5, Wu in view of Sheehan teaches the enclosure of claim 1 wherein the cavity has a substantial U-shape, extends substantially 15.5 inches (i.e. the Apple keyboard is 17.5 inches long and since the cavity of the keyboard is slightly less than this length it is substantially 15.5 inches, and is substantially 0.5 inches deep (i.e. the Apple keyboard is 1.3 inches deep and since the cavity is within the overall depth of the keyboard it is substantially 0.5 inches deep) (see Sheehan line 19).

5. Claims 15-16 and 18-25 are rejected under 35 U.S.C. 103(a), as being unpatentable over Wu in view of Ganthier et al. (US Patent: 5,865,546)

As to claim 15, Wu teaches a keyboard comprising:

a plurality of keys, each movable relative to the other keys (i.e. the keyboard is made up of movable keys) (see Fig. 2a);

a switch membrane assembly (i.e. PCB and electrical components membrane) including a plurality of circuits each having a node corresponding to a respective key

(i.e. the keys activate the switches on the membrane when pressed), wherein each circuit is operable to generate a signal when a key corresponding to the circuit's node is moved relative to the node; an upper enclosure (i.e. upper enclosure) to hold the keys (see Fig. 2c); and a lower enclosure (i.e. the lower enclosure) to support the switch membrane assembly (see Fig. 2c). However, Wu does not explicitly teach the lower enclosure including: a region forming a cavity and operable to stiffen the lower enclosure, and a node support located in the cavity and operable to support a node of the switch membrane assembly.

Ganthier teaches the lower enclosure including: a region forming a cavity (105) (i.e. the region where the socket exists) and operable to stiffen the lower enclosure (104) (i.e. the existence of the socket structure stiffen the bottom enclosure 104 of the keyboard by spreading the forces), and a node support (107) (i.e. the individual pin socket that support the pin input) located in the cavity and operable to support a node of the switch membrane assembly (i.e. since the socket receives the input pin which are nodes from the keyboard) (see Fig. 1, Col. 4, Lines 15-54).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have utilized the bottom socket connection design of Ganthier to the overall modular keyboard design of Wu in order to create an easier inter connection between input device for computer (see Ganthier, Col. 2, Lines 40-60).

As to claim 20, see the discussion of claim 15 above, Wu teaches a method for supporting a switch membrane assembly of a keyboard (see Wu, Fig. 2a, 2c), Ganthier

teaches forming a cavity (105) in a region of a lower enclosure of a keyboard to stiffen the lower enclosure (104); locating a node support (107) in the cavity to support a circuit node of the switch membrane assembly (see Ganthier, Fig. 1). Therefore, the combination of Wu and Ganthier meets the claim.

As to claim 24, see discussion of claim 15 above, Wu teaches a method for generating a signal (i.e. since the membrane circuitry creates an electronic connection that is then sent to the computer it generates a signal for the computer), the method comprising: moving a key of a keyboard to move a top node (i.e. the cap portion of the key is set on actuating mechanism which is a rubber sheet and are the top node) of a switch membrane assembly toward a corresponding bottom node of the assembly (i.e. the electrical component membrane is the bottom node); contacting the bottom node with the top node to generate a signal (the contact by the top node with the bottom node occurs as the key is pressed) (see Wu, Fig. 2a, 2b Col 5, Lines 15-53). Ganthier teaches supporting the bottom node (i.e. the electrical contact circuit) with a node support (i.e. the 107 socket on cavity that support the pin input from the circuit) when the top node contacts the bottom node (see Ganthier, Fig. 1, Col.4, Lines 15-35). Therefore, the combination of Wu and Ganthier meets the claim.

As to claim 16, Ganthier teaches the keyboard of claim 15 wherein the lower enclosure includes thirteen node supports (i.e. since the sockets have a plurality of pin

sockets more than two it has thirteen of the pin input supports), each operable to support a respective node of the switch membrane assembly (i.e. the pins are the node from the switch assembly) (see Fig. 1, Col. 3, Lines 1-15, Col. 4, Lines 15-54).

As to claim 18, Ganthier teaches the keyboard of claim 15 wherein the lower enclosure includes a rib operable to maintain the position of the node support relative to the node of the switch membrane assembly (i.e. since the rib is the filling material of the socket it extends between the individual nodes to help maintain the position of the pin socket so the pin will be inputted correctly) (see Fig.1, Col. 4, Lines 15-35).

As to claim 21, Ganthier teaches the method of claim 20 further comprising locating a rib in the cavity to maintain the position of the node support relative to a floor of the lower enclosure (i.e. since the rib is the filling material of the socket it extends between the individual nodes to help maintain the position of the pin socket so the pin will be inputted correctly) (see Fig.1, Col. 4, Lines 15-35).

As to claim 22, Ganthier teaches the method of claim 21 wherein locating the rib includes extending the rib between the node support and a wall of the cavity (i.e. since the rib is the filling material of the socket it extends between the individual node support down to the lower cavity wall) (see Fig.1, Col. 4, Lines 15-35).

As to claim 23, Ganthier teaches the method of claim 21 wherein locating the rib includes extending the rib between two node supports (i.e. the rib is the filing for the entire socket which naturally extend between any two node supports pin socket) (see Fig.1, Col. 4, Lines 15-35).

As to claim 25, Wu teaches the method of claim 24 wherein moving the key of the keyboard includes pushing the key toward the top node (i.e. the rubber dome sheet having restorative forces that push the key toward the top node when it is pressed) (see Fig. 2a, Col. 3, Lines 1-20).

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Ganthier as applied to claim 15-16, and 18-25 above, and further in view of Anderson (US Patent: 6,587,094).

As to claim 17, see discussion of claim 15 above, Wu and Ganthier teaches the keyboard of claim 15 having the lower enclosure, but does not explicitly teaches includes two legs operable to support a portion of the lower enclosure above a surface, and the region extends between the two legs. Anderson teaches a keyboard having two legs (i.e. the two bumps placed on the bottom of the keyboard to separate it from the surface below the keyboard which is visible in Figure 2) operable to support a

portion of the lower enclosure above a surface, and the region extends between the two legs (i.e. since the two bumps are widely separated and placed on the corner of the keyboard) (see Anderson, Fig. 2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have added the two legged keyboard support design of Anderson to the overall modular keyboard design of Wu and Ganthier in order to create a more flexible keyboard for computer application (see Anderson, Col. 2, Lines 34-40).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Foster et al. (US Pub: 2002/0030969), Lasko et al. (US Patent: 5,302,970), and Abraham (US Patent: 5,841,374) are cited to teach alternate embodiment of keyboard that are similar to the present invention.

Inquiry


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Calvin Ma
December 18, 2007


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SUPERVISORY PATENT EXAMINER